

Applicant Initiated Interview Request Form

Application No.: 10/547,339 First Named Applicant: YIXIN ZENG, ET AL.
 Examiner: LEWIS, BEN Art Unit: 1795 Status of Application: Received FAIPP Pre-Interview Communication

Tentative Participants:

(1) Lee L. Stepina (2) _____
 (3) _____ (4) _____

Proposed Date of Interview: June 11, 2010 Proposed Time: 10:30 AM

(1) ☐ Telephonic (2) ☒ Personal (3) ☐ Video Conference

Exhibit To Be Shown or Demonstrated: ☐ YES ☒ NO

If yes, provide brief description: _____

Issues To Be Discussed

| Issues (Rej., Obj., etc) | Claims/Fig. #s | Prior Art | Discussed | Agreed | Not Agreed |
|-----------------------------|---|--|--------------------------|--------------------------|--------------------------|
| (1) <u>Objection</u> | <u>6</u> | <u>N/A</u> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| (2) <u>Rejection</u> | <u>1, 2, 3, 4, 5, 6, 7, 8, 11, 17, 18, and 20</u> | <u>Yoshizawa, Shimotori et al.</u> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| (3) _____ | _____ | _____ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| (4) _____ | _____ | _____ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

☐ Continuation Sheet Attached

Brief Description of Arguments to be Presented:

See the attached Proposed Amendment under 37 C.F.R. § 1.111.

An interview was conducted on the above-identified application on _____.

NOTE:

This form should be completed by applicant and submitted to the examiner in advance of the interview (see MPEP § 713.01).

This application will not be delayed from issue because of applicant's failure to submit a written record of this interview. Therefore, applicant is advised to file a statement of the substance of this interview (37 CFR 1.133(b)) as soon as possible.

 (Applicant/Applicant's Representative Signature)

 (Examiner/SPE Signature)

DOCKET NO: 277532US26X PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :
YIXIN ZENG, ET AL. : EXAMINER: LEWIS, B.
SERIAL NO: 10/547,339 :
FILED: APRIL 18, 2006 : GROUP ART UNIT: 1795
FOR: FUEL CELL AND OXIDANT :
DISTRIBUTION PLATE FOR FUEL CELL

PROPOSED AMENDMENT UNDER 37 C.F.R. § 1.111

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

In response to the Office Action dated April 12, 2010, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A fuel cell, comprising:

a membrane-electrode assembly including an electrolyte membrane having an ion-conducting property, an oxidant pole disposed at one side of the electrolyte membrane in a thickness direction thereof, and a fuel pole disposed at other side of the electrolyte membrane in the thickness direction thereof;

an oxidant distributing plate disposed facing the oxidant pole that supplies an oxidant gas to the oxidant pole; and

a fuel distributing plate disposed facing the fuel pole that supplies a fuel to the fuel pole, wherein

at least one of the oxidant distributing plate and the fuel distributing plate is provided with (a) an opposite passage formed on an opposite surface which is opposite to the membrane-electrode assembly, and (b) a reaction passage on a facing surface which faces the membrane-electrode assembly, which is communicated with the opposite passage, and which allows the oxidant gas or the fuel having flowed in the opposite passage to flow in the reaction passage, and

wherein a pore rate of the oxidant distributing plate is larger at a downstream area than at an upstream area, of the reaction passage.

Claim 2 (Previously Presented): The fuel cell according to claim 1, wherein for at least one of the oxidant distributing plate and the fuel distributing plate, a humidifying element that humidifies the oxidant gas or the fuel flowing in the opposite passage in the fuel cell is provided.

Claim 3 (Currently Amended): The fuel cell according to claim 3, wherein the humidifying element ~~is formed by making~~ includes a part of the ~~oxidant distributing plate and/or the fuel distributing plate~~ that is porous to have and has a transmitting property in a thickness direction thereof.

Claim 4 (Currently Amended): A fuel cell, comprising:

a membrane-electrode assembly including an electrolyte membrane having an ion-conducting property, an oxidant pole disposed at one side of the electrolyte membrane in a thickness direction thereof, and a fuel pole disposed at other side of the electrolyte membrane in the thickness direction thereof;

an oxidant distributing plate disposed facing the oxidant pole that supplies an oxidant gas to the oxidant pole; and

a fuel distributing plate disposed facing the fuel pole that supplies a fuel to the fuel pole, wherein

at least one of the oxidant distributing plate and the fuel distributing plate is provided with (a) an opposite passage formed on an opposite surface which is opposite to the membrane-electrode assembly, (b) a reaction passage which is formed on a facing surface which faces the membrane-electrode assembly, which is communicated with the opposite passage, and which allows the oxidant gas or the fuel having flowed in the opposite passage to flow in the reaction passage, and (c) a porous portion that communicates at least a part of the opposite passage with at least a part of the reaction passage,

wherein an active material contained in the oxidant gas or an active material contained in the fuel flowing in the opposite passage is supplied to the reaction passage via pores of the porous portion, and

wherein a pore rate of the at least one of the oxidant distributing plate and fuel distributing plate is larger at a downstream area than at an upstream area, of the reaction passage.

Claim 5 (Previously Presented): The fuel cell according to claim 4, wherein the part of the oxidant distributing plate and/or the part of the fuel distributing plate are/is a downstream area of the reaction passage.

Claim 6 (Currently Amended): The fuel cell according to claim 1, further including a refrigerant distributing plate disposed at opposite side which is opposite to the membrane-electrode assembly with respect to the oxidant distributing plate and/or the fuel distributing plate for allowing a refrigerant to flow,

wherein [[the]] a humidifying element is formed by making the refrigerant distributing plate porous to have a transmitting property in a thickness direction thereof, so that the refrigerant flowing in the refrigerant distributing plate is supplied to the opposite passage of the oxidant distributing plate and/or the fuel distributing plate.

Claim 7 (Previously Presented): The fuel cell according to claim 1, wherein a downstream area of the opposite passage and an upstream area of the reaction passage of the oxidant distributing plate, are formed on the oxidant distributing plate by a front-rear relation.

Claim 8 (Previously Presented): The fuel cell according to claim 1, wherein the oxidant distributing plate and/or the fuel distributing plate have/has a hydrophilic property.

Claims 9-16 (Canceled).

Claim 17 (Currently Amended): An oxidant distributing plate for a fuel cell to be disposed facing to an oxidant pole of a membrane-electrode assembly of the fuel cell for supplying an oxidant gas to the oxidant pole, wherein

an opposite passage which is formed on an opposite surface opposite to the membrane-electrode assembly and in which the oxidant gas flows; and

a reaction passage which is formed on a facing surface which faces to the membrane-electrode assembly, which is communicated with the opposite passage, and which allows the oxidant gas having flowed in the opposite passage to flow in the reaction passage,

wherein at least a downstream area of the reaction passage of the oxidant distributing plate is porous, and

wherein a pore rate of the oxidant distributing plate is relatively larger at a downstream area than at an upstream area, of the reaction passage.

Claims 18-21 (Canceled).

Claim 22 (Currently Amended): The oxidant distributing plate for a fuel cell according to claim 17, wherein the oxidant distributing plate has a hydrophilic property, ~~and a pore diameter of the oxidant distributing plate is relatively smaller at a downstream than at an upstream area, of the reaction passage.~~

Claims 23-25 (Canceled).

REMARKS/ARGUMENTS

Favorable reconsideration of this application, in light of the present amendments and following discussion, is respectfully requested.

Claims 1, 2, 3, 4, 5, 6, 7, 8, 17, and 22 are pending. Claims 9, 14, 16, 23, and 25 were canceled previously. Claims 10-13, 15, 18, 19, 20, 21, and 24 are canceled by the present amendment. Claims 1, 3, 4, 6, 17, and 22 are amended. Support for the amendments to Claims 1, 4, and 17 can be found in now-canceled dependent Claim 10, for example. Support for the amendments to the remaining claims is self-evident. No new matter is added.

In the outstanding pre-interview communication (“communication”), Claim 6 was objected to for lacking antecedent basis for the feature “the humidifying element.” Claims 1, 2, 3, 4, 5, 6, 7, 8, 11, 17, 18, and 20 were rejected under 35 U.S.C. § 102(a) as anticipated by Yoshizawa (Japanese Patent No. 2004/039357, herein “Ref. N”). Claims 10, 12, 13, 15, 19, 21, 22, and 24 were rejected under 35 U.S.C. § 103(a) as obvious over Ref. N in view of Shimotori et al. (U.S. Patent Pub. 2004/0110049, herein “Ref. A”).

Regarding the objection to Claim 6, Claim 6 is amended to replace the word “the” with the word “a” where appropriate. Accordingly, Applicants respectfully submit that the objection to Claim 6 is overcome.

Regarding the rejection of Claims 1, 4, and 17 as anticipated by Ref. N, that rejection is respectfully traversed by the present response.

Each of Claims 1, 4, and 17 is amended to recite features relating to the pore rate of the reaction passage. Specifically, Claim 1 is amended to recite the features of now-cancelled dependent Claim 10.

Claim 4 is amended to recite “wherein a pore rate of the at least one of the oxidant distributing plate and fuel distributing plate is larger at a downstream area than at an upstream area of the reaction passage.”

Claim 17 is amended to recite the features of now-canceled Claims 18 and 19 and recites “wherein a pore rate of the oxidant distributing plate is relatively larger at a downstream area than at an upstream area of the reaction passage.”

Applicants respectfully submit that, as noted in item #4 of the communication, Ref. N does not disclose the above-noted features.

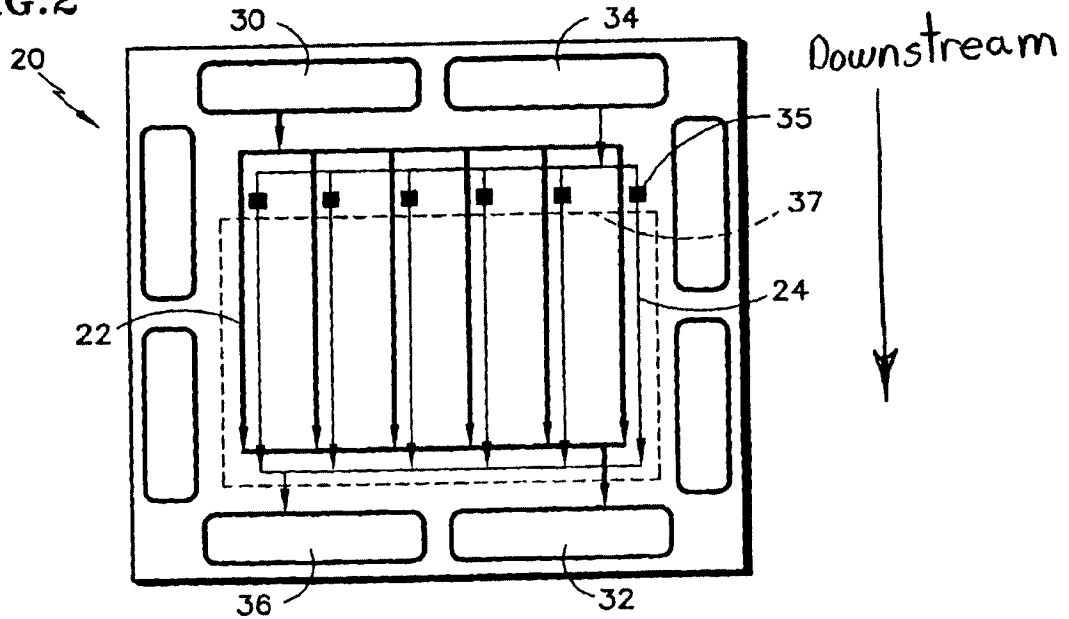
The communication relies on Ref. A to remedy the deficiencies discussed above regarding Ref. N. The communication cites numbered paragraph [0058] of Ref. A for the above-noted features. This paragraph states:

FIG. 13 shows an embodiment of a plate (20) that comprises three layers of material. The first or central **layer** (20a) is a flat plate made with a conductive porous material and is sandwiched between the outer **layers** (20b) and (20c). The second and third layers are also made of conductive porous materials and can have punched oxidant flow channels (22) and coolant flow channels (24). The pore sizes in layer (20a) can typically average less than 10 microns in systems with bubble pressures of up to about 10 kPa. The pore diameters of the outer layers (20b) and (20c), are larger than the pore diameters in the first layer (20a). This can result in better water permeability through the second and third layers, while maintaining a sufficient wet seal in the first or central layer. This configuration allows the thickness of the outer layers to be increased, for example if necessary for structural reinforcement, without sacrificing favorable water permeability characteristics.

Thus, the pore sized is different in different **layers**.

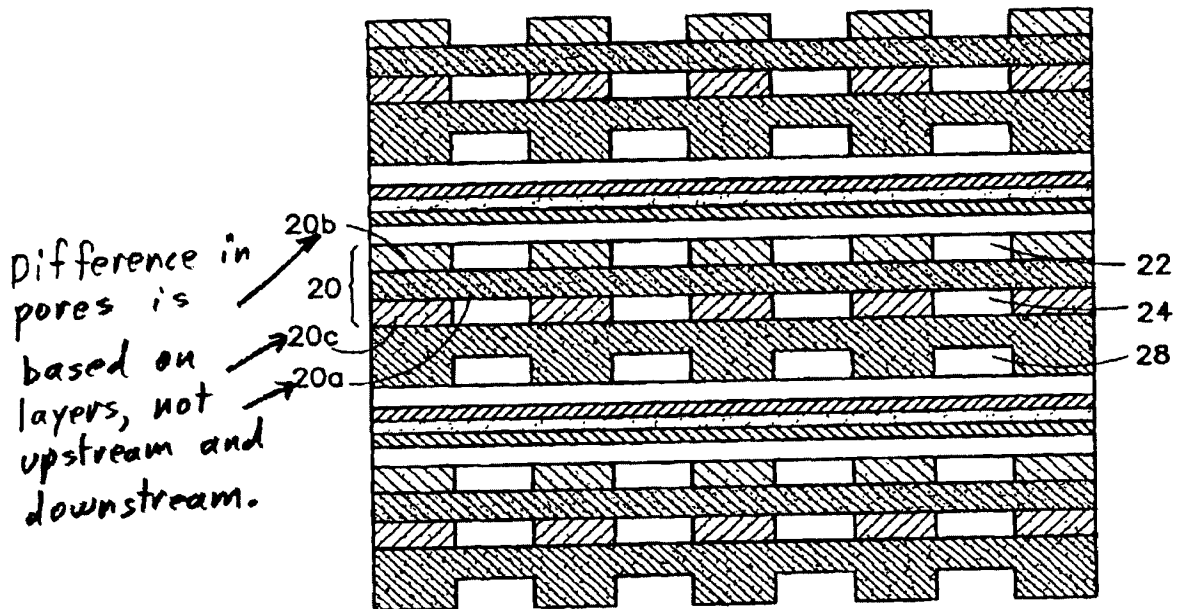
As shown in annotated Figs. 2 and 13 below, although the layers (20b) and (20c) have different pore sizes than the layer (20a), this physical arrangement does not result in a porosity at a **downstream** area greater than at an upstream area. Rather, as shown in Fig. 2, the strips (in cross-section) comprising the layer (20b) and the layer (20c) are disposed all along the plate (20) and are not specific to a downstream or upstream area.

FIG. 2



As shown in Fig. 2, the "downstream direction" is parallel to the layers. In contrast, Ref. A has different pore sizes in different layers, not within a layer itself.

FIG. 13



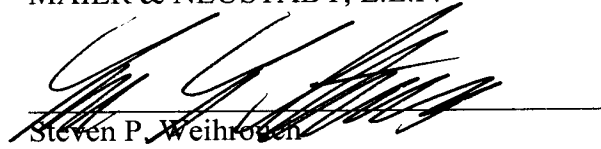
As is evident from the annotated figures from Ref. A above, the pore size varies only according to different layers, not according to a position upstream or downstream as recited in the independent claims. Therefore, Ref. A fails to remedy the deficiencies discussed above

regarding Ref. N. Consequently, Applicants respectfully submit that amended independent Claims 1, 4, and 17 and all of the claims depending therefrom patentably distinguish over any reasonable combination of the cited references for at least the reasons discussed above.

Should Examiner Lewis deem that any further action is necessary to place this application in even better form for allowance, Examiner Lewis is encouraged to contact Applicants' undersigned representative at the below-listed telephone number.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, L.L.P.



Steven P. Weihroben
Attorney of Record
Registration No. 32,829

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 08/09)

Lee Stepina
Registration No. 56,837